NIH CHEMICAL WASTE RECYCLINGPROGRAM

NIH shipped 63,582 lbs of batteries in 2009 for recycling.

> All batteries are collected for recycling. Examples are alkaline, lithium, nickel cadmium, nickel metal hydrides, coin batteries, lead-acid and all other types.

Pictured below are special containers for collection and shipment of the 3 most commonly used batteries.



NICKEL CADMIUM, NICKEL METAL HYDRIDE,

LITHIUM-ION, LITHIUM BATTERIES Nickel Cadmium, Nickel Metal Hydride, Lithium-Ion, and Lithium batteries are collected separately in containers/ bags and are then individually bagged and placed in a Rechargeable Battery Recycling Corporation (RBRC) Box that is supplied for free. The full box is shipped at



LEAD ACID BATTERIES

Lead Acid batteries are broken apart in the recycling

process and the lead, plastic and acid are separated.

The **lead** is melted, poured into ingots and delivered to

battery plants to be used in new batteries, bullets and

lead bricks for radioactive material shielding. The plastic

is melted and made into new battery cases, toys and

other parts, while the acid is refined and bottled for

reuse or neutralized and discharged.

LEAD ACID BATTERIES

Lead Acid batteries are collected and placed on wooden pallets and secured with bands for shipment.





NIH shipped 17,575 lbs

of fluorescent lamps

in 2009 for recycling.

Fluorescent light-tubes, compact fluorescent bulbs,

mercury and sodium vapor lamps, ultraviolet and

High Intensity Discharge (HID) lamps and all other

mercury containing devices (thermometers/

thermostats) are collected and shipped for mercury retorting, and glass & aluminum recovery.

NIH's chemical waste management program emphasizes reduction of chemical waste generation through process improvements wherever possible as well as recycling or beneficial reuse of chemical waste shipped off site for treatment and disposal.

NIH shipped 115,462 lbs of solvents in 2009 for fuel recovery.

The National Institutes of Health uses large quantities of organic solvents in research and support operations. Solvents like Acetonitrile, Ethyl Acetate, Hexanes, Xylene, Acetone and Alcohols are used in biomedical research processes to synthesize, extract, isolate, or purify chemicals.



SOLVENT WASTES

Solvent wastes are collected in NIH labs in blue plastic carboys, white solvent safety cans and bottles of various sizes. Shown below, solvent effluent from an HPLC unit is draining into 5 gallon blue carboys.

The spent solvents are analyzed for energy value and other properties prior to consolidation into a larger drum for shipment to waste processing facilities.

At waste processing facilities the solvents are blended into large storage tanks prior to shipment to cement kilns for use as fuel in their manufacturing processes.











BENEFICIAL REUSE PRODUCTS OF RECYCLED BATTERIES

no charge.

ALKALINE BATTERIES

ALKALINE BATTERIES

when full.

Alkaline batteries are collected in translucent

accumulation plastic containers and consolidated

Small Batteries
For Recycling
For pick-up please call
301-496-4710

into larger drums that are shipped for recycling

Alkaline batteries are fully recycled and used to produce various types of products. This includes new alkaline batteries, carbon wire, jewelry, shotgun casings, plastic bottles, and numerous other consumer items.

NICKEL CADMIUM BATTERIES Nickel Cadmium batteries are processed in metal

recovery furnaces. The reclaimed cadmium is used in the production of new nickel cadmium batteries for cell phones, drills, computers, cameras, PDAs, toys and games. It is also used as a corrosion resistant coating. The reclaimed nickel is used in the manufacture

of stainless steel products like sink parts, faucets, furniture, switch plates, and wires.













ALUMINUM

Aluminum end caps from light tubes are recycled.

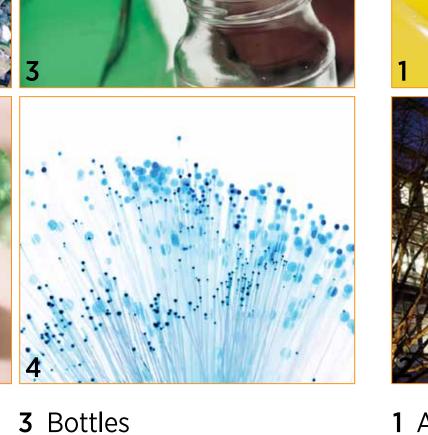
The aluminum is made into wires or pressed into sheets or foil. Its light weight and resistance to corrosion makes it ideal for use in aircraft and automobile parts,

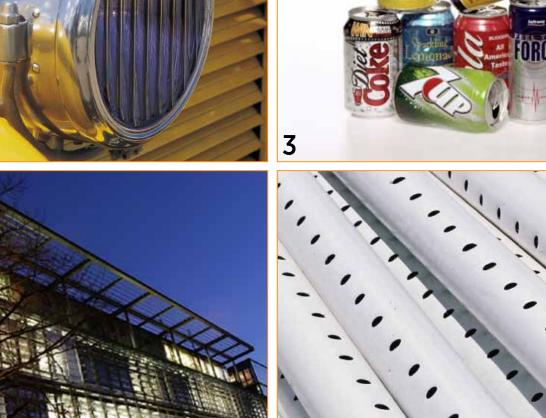
MERCURY

Mercury from light tubes and lamps are retorted during the recycling process. The retorted mercury is reused to manufacture common mercury-containing items such as compact fluorescent lamps, thermometers, switches, flame sensors, and dental amalgams.













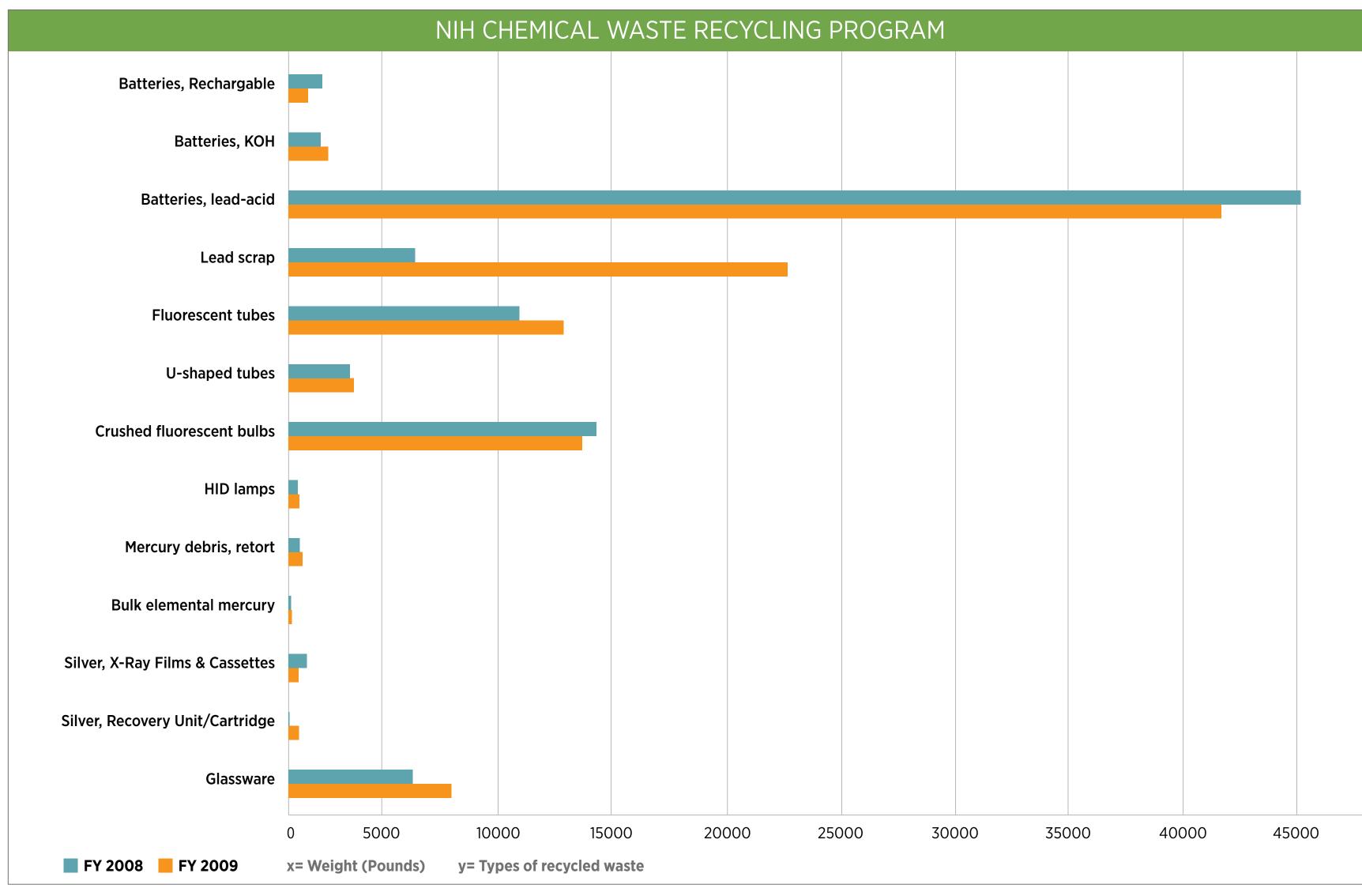


BENEFICIAL REUSE PRODUCT OF RECYCLED SOLVENTS

HIGH BTU SOLVENTS

The high BTU solvents are used in cement kilns as fuel in the production of cement. After being used in biomedical research processes the solvents are now used a second time as fuel.





The amounts of solvent waste with high BTU value generated in FY08 were 113624 lbs. and 110337 lbs. in FY09. Solvent wastes quantities are too big to plot on the graph above.





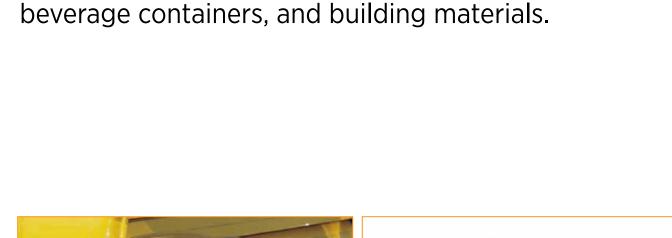




BENEFICIAL REUSE PRODUCTS OF RECYCLED LAMPS

GLASS

Glass can be recycled infinitely without losing its purity or strength. While the primary end product of recycled glass is new glass bottles and jars, there are some other uses for recycled glass in the manufacturing industry like in the production of fiberglass, marbles, eco-glass bottles, beads, synthetic marble, roof tiles, industrial flooring, jewelry, marblite, and glassphalt.



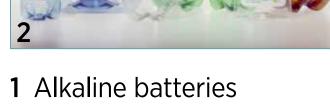






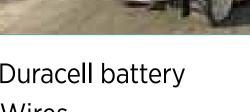






2 Plastic bottles

3 Duracell battery







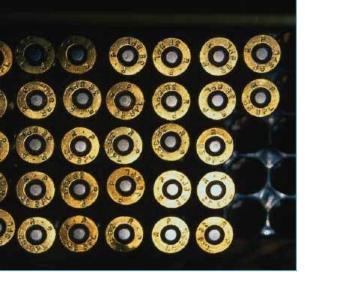








4 Bullets 2 Sulfuric acid



1 Glass 2 Marbles

3 Cans 4 Building materials

1 Light bulbs